Deborah Ellis, MS

Consulting Arborist & Horticulturist

Service since 1984

Ken Rodrigues
Kenneth Rodrigues & Partners
445 N. Whisman Road, Suite 200
Mountain View, CA 94043

March 3, 2006

Re: Duane & Lawrence, Sunnyvale – Addendum to January 31, 2006 Arborist Report

Dear Ken:

Changes have been made in the site plan to save many additional existing trees. Several trees will also be transplanted to other locations on the site. These changes are reflected in the revised Tree Map on the next page, Table 1 "Changes" on page 3, and Table 2 Complete Summary Tree Table on page 5. Other information from my January 31report (such as Tree Protection Specifications) should remain the same.

The changes are:

1) **All of the Canary Island pines along the south perimeter (#63 to 92) will be saved**, (except for tree #69 which will be located in the proposed parking lot). In the previous plan, pines #1, 63 to 69 and 85 to 92 were scheduled for removal.

2) **All of the saucer magnolias (#93 to 98) will be transplanted** to other areas of the site, instead of being removed.

3) **Japanese maple #26 will be transplanted** (instead of removed) to an open space between some of the Canary Island pines.

I hope that this information will be helpful to you. Thank you for the opportunity to provide service again. Please call me if you have questions or if I can be of further assistance.

Sincerely,

Debbie

Deborah Ellis, MS.
Consulting Arborist & Horticulturist
Certified Professional Horticulturist #30022, ASCA Registered Consulting Arborist #305, W.C.I.S.A. Certified Arborist #457

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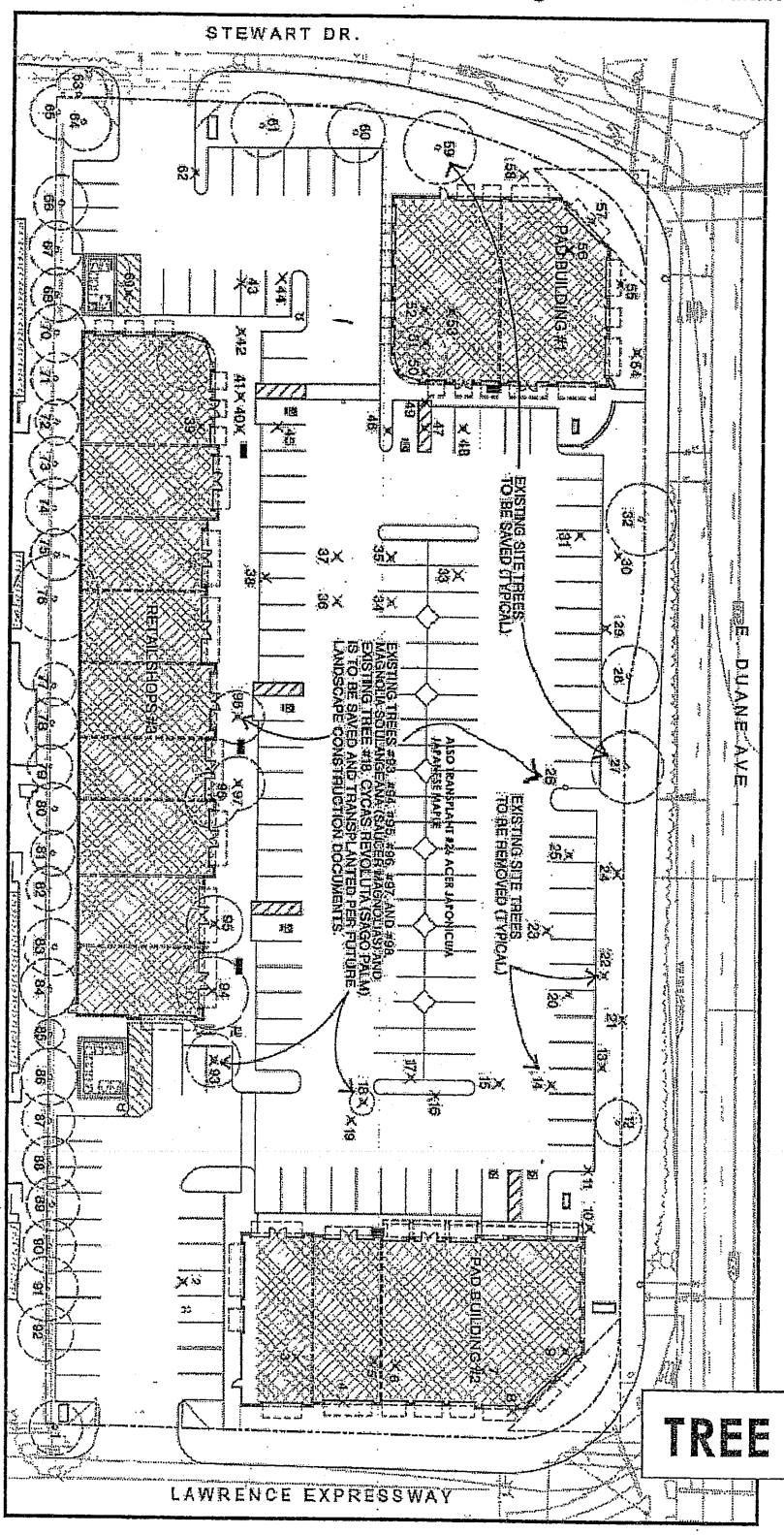

TREE MAP

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Table 1 Changes in "Action" relative to Tree

Tree #	Scientific & Common name	DBH[1]	Multi Trunk D's	Ord?[2]	Size[3]	Preservation Suitability[4]	Value[5]	Expected Construction Impact	Action	Reason
01	*Pinus canariensis*, Canary Island pine	15.8		X	30x18	Good	5400.00	Moderate	Save	
26	Acer Japonicum, Japanese maple	6.5			10x12	Fair/Good	790.00	Severe	Transplant	Construction
63	Canary Island pine	14.9		X	45x20	Good	4660.00	Moderate	Save	
64	Canary Island pine	16.8		X	45x20	Good	5700.00	Moderate	Save	
65	Canary Island pine	16.8		X	45x20	Good	5900.00	Low	Save	
66	Canary Island pine	18.1		X	50x18	Fair/Poor	3720.00	Moderate/ Severe	Save	
67	Canary Island pine	18.1		X	50x20	Fair/Good	4630.00	Moderate/ Severe	Save	
68	Canary Island pine	16.4		X	50x20	Fair	3340.00	Moderate	Save	
86	Canary Island pine	21.7		X	45x20	Fair/Good	7700.00	Low/Moderate	Save	
87	Canary Island pine	18.4		X	45x18	Fair/Good	6300.00	Severe	Save	Construction of parking lot may be a problem – conserve existing base rock and make final assessment to save or remove during

[1] DBH means tree trunk diameter "at breast height" measured at 4.5 feet above ground level. This is the arboricultural industry standard measurement height used in many tree-related calculations. Parentheses a number after DBH (e.g. (2.5) indicates that the tree was measured at a height other than DBH, due to low branching or other tree architecture.

[2] Ord.? = ordinance tree. An `X' in this column indicates that the tree is an ordinance tree.

[3] Size = canopy height x width in feet, estimated.

[4] Preservation Suitability: considers tree condition along with species and use of the site. See footnote #8, page 14 for a more complete explanation.

[5] Value: Estimated monetary tree value as per Trunk Formula Method. See page 11 for a complete explanation.

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Tree #	Scientific & Common name	DBH[1]	Multi Trunk D's	Ord?[2]	Size[3]	Preservation Suitability[4]	Value[5]	Expected Construction Impact	Action	Reason
										construction.
88	Canary Island pine	15.3		X	50x20	Fair/Good	3990.00	Severe	Save	Same as #87
89	Canary Island pine	15.7		X	40x18	Fair/Good	4590.00	Severe	Save	Same as #87
90	Canary Island pine	14.1		X	40x18	Fair/Good	3720.00	Severe	Save	Same as #87
91	Canary Island pine	22.1		X	50x22	Fair/Good	7800.00	Severe	Save	Same as #87
92	Canary Island pine	17.5		X	50x20	Fair/Good	5100.00	Severe	Save	Same as #87
93	*Magnolia soulangeana*, Saucer magnolia	9.3	5.4, 4.3, 4.5		20x18	Fair/Good	3100.00	Severe	Transplant	Construction
94	Saucer magnolia	10.8 (3.5)	5.4, 2.8, 4.9, 3.1		22x25	Fair/Good	3610.00	Severe	Transplant	Construction
95	Saucer magnolia	11.6 (4)	5.1, 3.6, 4.9, 4.4		25x22	Fair/Good	4230.00	Severe	Transplant	Construction
96	Saucer magnolia	9.8 (3)	5.2, 4.4, 4.8		25x20	Fair/Good	3010.00	Severe	Transplant	Construction
97	Saucer magnolia	9.7 (3)	3.1, 2.8, 3.6, 4.9		25x20	Fair/Good	2950.00	Moderate/Severe	Transplant	Construction
98	Saucer magnolia	12.1 (3.5)	4.9, 4.3, 4.1, 2.1, 3.9		22x20	Fair/Good	4520.00	Moderate/Severe	Transplant	Construction

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Table 2 Complete Summary Tree Table

* By Tree Number indicates change in "Action" since January 31 report.

Tree #	Scientific & Common name	DBH	Multi Trunk D's	Ord?	Size	Preservation Suitability	Value	Expected Construction Impact	Action	Reason
*01	*Pinus canariensis*, Canary Island pine	15.8		X	30x18	Good	5400.00	Moderate	Save	
02	*Fraxinus angustifolia* `Raywood', Raywood ash	12.2		X	25x30	Fair/Good	1380.00	Severe	Remove	Construction
03	*Jacaranda mimosifolia*, Jacaranda	7.5			18x20	Good	690.00	Severe	Remove	Construction
04	Jacaranda	8.3			18x25	Good	830.00	Severe	Remove	Construction
05	Jacaranda	8.0			18x20	Good	780.00	Severe	Remove	Construction
06	Jacaranda	8.7			18x20	Good	860.00	Severe	Remove	Construction
07	Jacaranda	7.4			16x22	Good	630.00	Severe	Remove	Construction
08	Jacaranda	9.3			18x22	Good	1100.00	Severe	Remove	Construction
09	Jacaranda	9.9			20x25	Good	1170.00	Severe	Remove	Construction
10	*Geijera parviflora*, Australian willow	14.4 (4)		X	25x25	Fair	2510.00	Severe	Remove	Construction
11	Australian willow	14.6 (2.5)			25x20	Fair	2710.00	Severe	Remove	Construction
12	*Acer platanoides*, Norway maple	7.3			20x16	Fair/Good	850.00	Low	Save	
13	Australian willow	14.4 (4)		X	25x25	Fair	3260.00	Severe	Remove	Construction
14	*Acer palmatum*, Japanese maple	7.0 (1)			10x18	Fair/Good	760.00	Severe	Remove	Construction
15	*Lagerstroemia indica*, crape myrtle	5.5 (2)	3.5, 2, 2		16x12	Fair	770.00	Severe	Remove	Construction
16	crape myrtle	10.0 (3)	3, 2, 2, 2, 2, 2, 2, 2		25x18	Fair	3040.00	Severe	Remove	Construction
17	Japanese maple	3.2 (0.5)			7x6	Good	230.00	Severe	Remove	Construction
18	*Cycas revoluta* cycad	8.5 (3)		X	5x7	Good	2730.00	Severe	Transplant	Valuable plant
19	crape myrtle	8.0			30x20	Fair	2530.00	Severe	Remove	Construction
20	Japanese maple	10.9 (1)			20x25	Fair/Good	2010.00	Severe	Remove	Construction
21	Australian willow	7.1			25x15	Poor	520.00	Low	Remove	Crowded, Structure

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Tree #	Scientific & Common name	DBH	Multi. Trunk D's	Ord?	Size	Preservation Suitability	Value	Expected Construction Impact	Action	Reason
22	Australian willow	16.2 (4)		X	30x30	Fair	3950.00	Severe	Remove	Structure, Construction
23	Australian willow	5.6			16x16	Poor	300.00	Severe	Remove	Construction, Crowding, Structure
24	*Fraxinus species*, ash	11.2			35x25	Fair	1850.00	Low/Moderate	Remove	Structure
25	Japanese maple	8.1 (1)			16x20	Fair/Good	1310.00	Severe	Remove	Construction
*26	Japanese maple	6.5			10x12	Fair/Good	790.00	Severe	Transplant	Construction
27	ash	11.8			28x25	Fair/Good	2010.00	Low/Moderate	Save	
28	ash	9.7			30x20	Fair/Good	1440.00	Low	Save	
29	Australian willow	14.5 (4)		X	25x35	Fair/Good	3410.00	Severe	Remove	Construction
30	Australian willow	12.2 (3)			30x20	Poor/Fair	1600.00	Moderate/Severe	Remove	Construction, Structure
31	Raywood ash	14.8		X	30x20	Fair	1740.00	Severe	Remove	Construction, Structure
32	Australian willow	11.5 (4)			18x25	Fair	1910.00	Low/Moderate	Save	
33	*Prunus cerasifera* `Krauter Vesuvius' purple leaf plum	8.0 (2.5)			20x12	Poor	370.00	Severe	Remove	Construction, Condition
34	*Pyrus kawakami*, evergreen pear	8.6			22x22	Fair/Good	1560.00	Severe	Remove	Construction
35	evergreen pear	12.4		X	25x25	Fair	2310.00	Severe	Remove	Construction
36	evergreen pear	11.9			30x25	Fair	2130.00	Severe	Remove	Construction
37	evergreen pear	8.4			22x20	Fair/Good	1390.00	Severe	Remove	Construction
38	*Albizia julibrissin*, silk tree	12.7		X	30x40	Fair/Good	1780.00	Severe	Remove	Construction
39	Raywood ash	7.5			18x15	Fair/Good	560.00	Severe	Remove	Construction
40	Raywood ash	5			18x15	Fair/Good	250.00	Moderate/Severe	Remove	Construction
41	Raywood ash	5.1			18x15	Fair/Good	260.00	Severe	Remove	Construction
42	Raywood ash	7.4			20x15	Fair/Good	510.00	Low/Moderate	Remove	Landscaping
43	Raywood ash	6.5			18x15	Fair	340.00	Severe	Remove	Construction
44	Raywood ash	7.5			20x18	Fair	510.00	Severe	Remove	Construction
45	Raywood ash	9.9			25x20	Fair	830.00	Severe	Remove	Construction
46	Raywood ash	7.2			25x16	Fair/Poor	380.00	Moderate/Severe	Remove	Construction, Structure
47	Raywood ash	12.2		X	25x25	Fair	1250.00	Severe	Remove	Construction
48	Raywood ash	6.6			16x16	Fair	360.00	Severe	Remove	Construction
49	Raywood ash	7.0			25x20	Fair/Good	440.00	Severe	Remove	Construction
50	Raywood ash	4.4			12x15	Fair	150.00	Severe	Remove	Construction
51	Raywood ash	5.7			20x12	Fair	290.00	Severe	Remove	Construction

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Tree #	Scientific & Common name	DBH	Multi Trunk D's	Ord?	Size	Preservation Suitability	Value	Expected Construction Impact	Action	Reason
52	Raywood ash	7.7			25x18	Fair/Good	550.00	Severe	Remove	Construction
53	Raywood ash	5.5			12x12	Fair/Good	280.00	Severe	Remove	Construction
54	ash	10.2			30x20	Fair	1540.00	Moderate/Severe	Remove	Construction
55	Australian willow	10.4 (4)			18x22	Fair	1190.00	Severe	Remove	Construction, Crowding
56	Raywood ash	14.5		X	40x30	Fair	1760.00	Severe	Remove	Construction
57	*Liquidambar styraciflua*, American sweet gum	11.8			50x25	Fair	1280.00	Severe	Remove	Construction, Structure
58	American sweet gum	10.1			40x20	Good	1290.00	Severe	Remove	Construction
59	American sweet gum	10.4			40x25	Good	1290.00	Moderate	Save	
60	American sweet gum	12.0			30x20	Fair/Good	1420.00	Moderate	Save	
61	American sweet gum	12.9 (1)		X	40x22	Good	1970.00	Moderate	Save	
62	Norway maple	12.2		X	30x25	Fair/Good	2290.00	Severe	Remove	Construction
*63	Canary Island pine	14.9		X	45x20	Good	4660.00	Moderate	Save	
*64	Canary Island pine	16.8		X	45x20	Good	5700.00	Moderate	Save	
*65	Canary Island pine	16.8		X	45x20	Good	5900.00	Low	Save	
*66	Canary Island pine	18.1		X	50x18	Fair/Poor	3720.00	Moderate/ Severe	Save	
*67	Canary Island pine	18.1		X	50x20	Fair/Good	4630.00	Moderate/ Severe	Save	
*68	Canary Island pine	16.4		X	50x20	Fair	3340.00	Moderate	Save	
69	Canary Island pine	16.0		X	40x25	Good	4910.00	Severe	Remove	Construction
70	Canary Island pine	14.5		X	40x20	Fair/Good	3630.00	Moderate	Save	
71	Canary Island pine	13.1		X	30x18	Fair	2380.00	Moderate	Save	
72	Canary Island pine	12.1		X	40x16	Fair	2040.00	Moderate	Save	
73	Canary Island pine	16.1		X	50x18	Fair	3860.00	Moderate	Save	
74	Canary Island pine	16.4		X	45x20	Fair/Good	4510.00	Moderate	Save	
75	Canary Island pine	16.9		X	50x18	Fair/Good	4790.00	Moderate	Save	
76	Canary Island pine	19.8		X	50x30	Fair	5800.00	Moderate	Save	
77	Canary Island	11.6			30x15	Fair/Poor	1700.00	Moderate	Save/Debatable	Structure

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Tree #	Scientific & Common name	DBH	Multi Trunk D's	Ord?	Size	Preservation Suitability	Value	Expected Construction Impact	Action	Reason
	pine									
78	Canary Island pine	16.6		X	45x18	Fair	3420.00	Moderate	Save	
79	Canary Island pine	19.0		X	50x16	Fair	5200.00	Moderate	Save	
80	Canary Island pine	22.4		X	50x18	Good	9800.00	Moderate	Save	
81	Canary Island pine	18.0		X	45x16	Fair	4650.00	Moderate	Save	
82	Save Canary Island pine	17.7		X	50x16	Fair	4650.00	Moderate	Save	Save
83	Canary Island pine	17.6		X	45x20	Fair/Good	5200.00	Moderate	Save	
84	Canary Island pine	16.5		X	45x20	Fair	4050.00	Moderate	Save	
85	Canary Island pine	10.4			28x10	Poor	920.00	Low/Moderate	Save/Debatable	Consider removing anyway due to Structure and crowding
*86	Canary Island pine	21.7		X	45x20	Fair/Good	7700.00	Low/Moderate	Save	
*87	Canary Island pine	18.4		X	45x18	Fair/Good	6300.00	Severe	Save	Construction of parking lot may be a problem – conserve existing base rock and make final assessment to save or remove during construction.
*88	Canary Island pine	15.3		X	50x20	Fair/Good	3990.00	Severe	Save	Same as #87
*89	Canary Island pine	15.7		X	40x18	Fair/Good	4590.00	Severe	Save	Same as #87
*90	Canary Island pine	14.1		X	40x18	Fair/Good	3720.00	Severe	Save	Same as #87
*91	Canary Island pine	22.1		X	50x22	Fair/Good	7800.00	Severe	Save	Same as #87
*92	Canary Island pine	17.5		X	50x20	Fair/Good	5100.00	Severe	Save	Same as #87
*93	*Magnolia soulangeana*, Saucer magnolia	9.3	5.4, 4.3, 4.5		20x18	Fair/Good	3100.00	Severe	Transplant	Construction
*94	Saucer magnolia	10.8 (3.5)	5.4, 2.8, 4.9, 3.1		22x25	Fair/Good	3610.00	Severe	Transplant	Construction
*95	Saucer	11.6	5.1,		25x22	Fair/Good	4230.00	Severe	Transplant	Construction

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Tree #	Scientific & Common name	DBH	Multi Trunk D's	Ord?	Size	Preservation Suitability	Value	Expected Construction Impact	Action	Reason
	magnolia	(4)	3.6, 4.9, 4.4							
*96	Saucer magnolia	9.8 (3)	5.2, 4.4, 4.8		25x20	Fair/Good	3010.00	Severe	Transplant	Construction
*97	Saucer magnolia	9.7 (3)	3.1, 2.8, 3.6, 4.9		25x20	Fair/Good	2950.00	Moderate/Severe	Transplant	Construction
*98	Saucer magnolia	12.1 (3.5)	4.9, 4.3, 4.1, 2.1, 3.9		22x20	Fair/Good	4520.00	Moderate/Severe	Transplant	Construction

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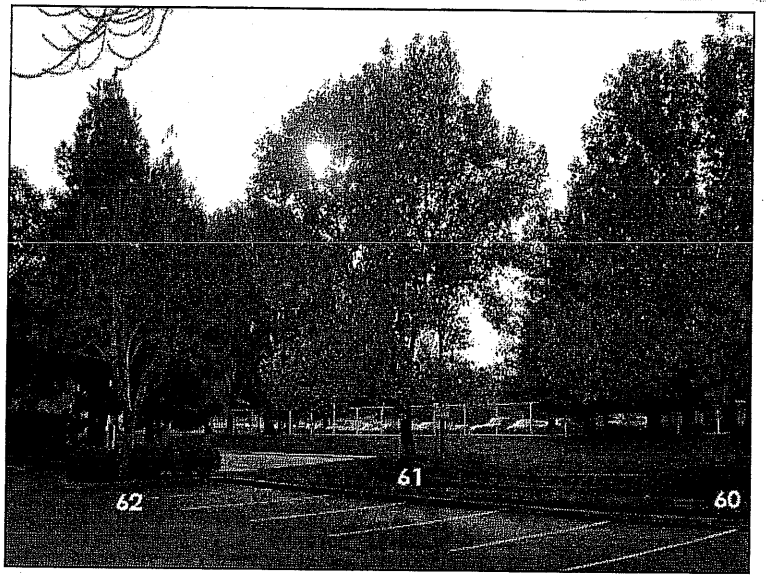
TREE SURVEY & ARBORIST REPORT



Duane & Lawrence
Sunnyvale, California

Prepared for:
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Kenneth Rodrigues & Partners
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JANUARY 31, 2006 (revised from 12/15/05 Arborist Report, & 12/20/05 addendum)

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Cover photo: American sweet gum trees **#60 & 61** with their beautiful fall leaf color, and Norway maple **#62.** Taken from the east in the West parking lot of Stewart Avenue.

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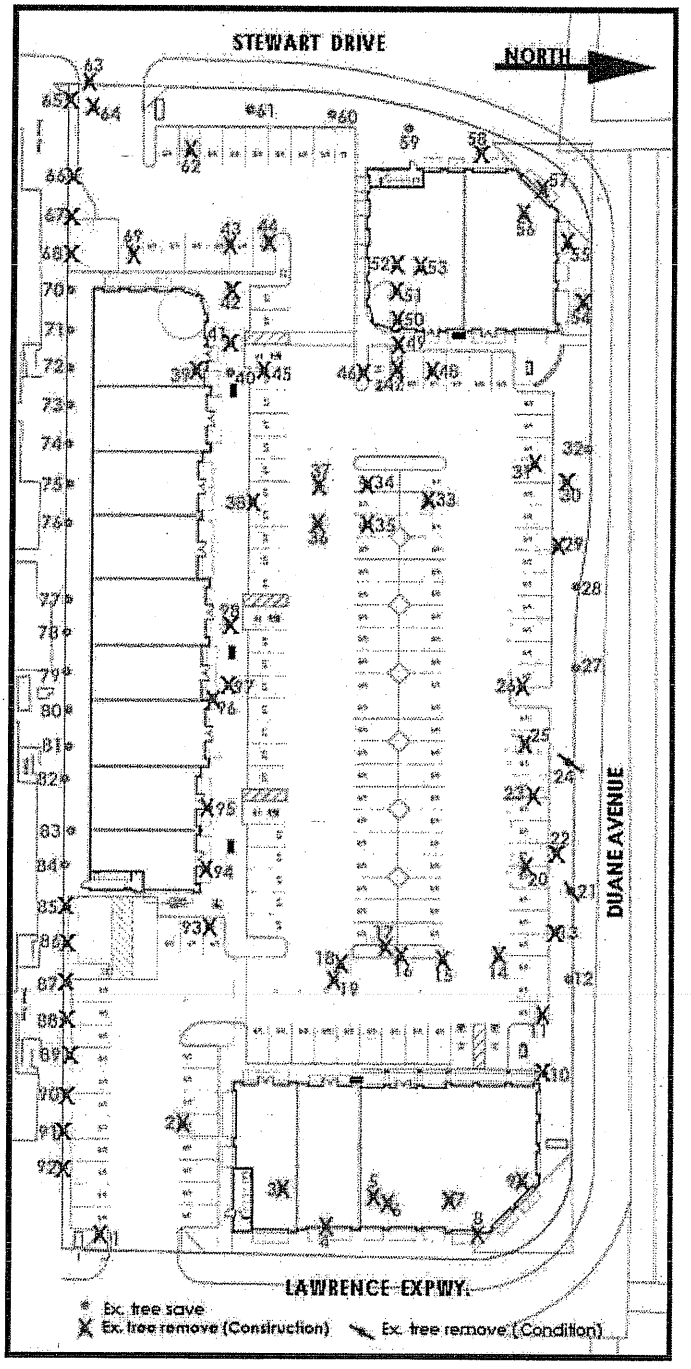
TREE MAP



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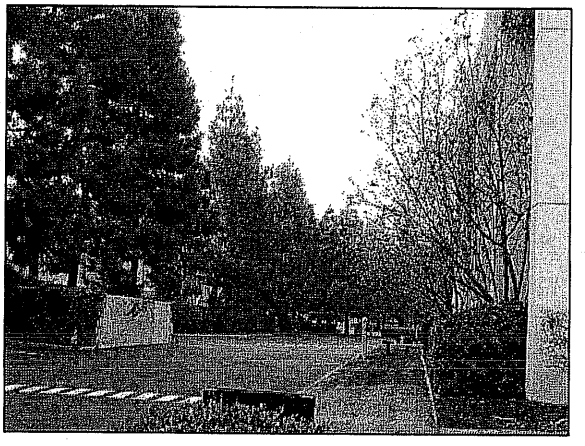
SUMMARY

Please refer to the Tree Map on the previous page, showing the numbered locations of all trees discussed in this report.

The Summary Tree Table beginning on page 4 lists all of the trees plus basic tree information. More detailed information on the trees, including "Work needed" and "Notes" can be found in the Detailed Tree Information Table beginning on page 19.

There are **98 existing trees** on site, all of which have been evaluated for this report. Forty-two of these trees are *ordinance trees*[1] in Sunnyvale. Most of the trees will have to be removed because they are within, or very close to, proposed construction (a new building or parking lot).

There are some very nice trees on this site, for example the row of **Jacaranda trees along Lawrence Expressway (trees #3 to 9**and some of the **Canary Island pines that border the south side of the property (trees #1 and 63 through 92**, although only we should be able to save trees 70 through 84). These pines *(see photos below)* are mostly in fair to good condition. They are tall trees that function to screen the adjacent apartment buildings to the south of the property. A new parking lot and retail building will be constructed close to these trees, but we should be able to save most of them if they are well protected before and during construction. Unfortunately all of the Jacarandas will have to be removed because there will be a new building in their vicinity. These trees are small enough however, so that they could be transplanted or at possibly salvaged by a tree moving company.



[1] An Ordinance Tree in Sunnyvale requires a permit for removal. Such trees have trunk diameters of 12 inches or greater, measured at 4 feet above the ground. If a multi-trunk tree, one trunk of 12 inches or a sum of all trunks of 36 inches or greater will qualify as an ordinance tree.

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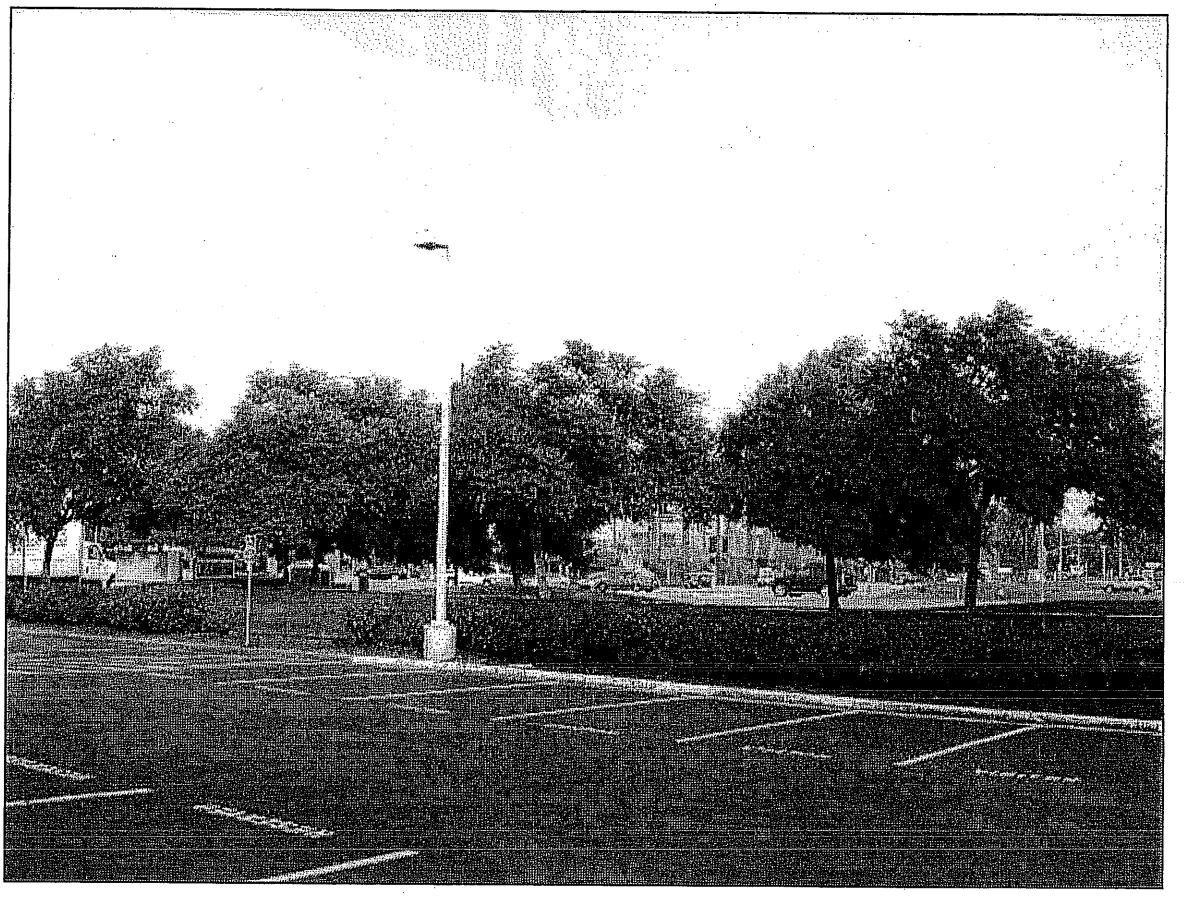
RECOMMENDATIONS

1) **Continue to work with me** as you refine your plans.
2) **Many of the smaller trees that are in the path of or too close to construction can be transplanted or possibly salvaged** by a tree moving company. Examples are: crape myrtles, Japanese maples and sago palm #18.
3) **I should review any revised plans, including final grading, utility, construction details and landscaping.** These plans were not reviewed for this project, and these additional improvements can impact trees.
4) **I should inspect staked improvement locations in the field relative to existing trees** that will remain, in order to verify that such trees can indeed be saved.
5) **Tree Protection Specifications** for trees to remain are included in the Appendix of this report on page 11.



Jacaranda trees #3 through 9 along Lawrence Expressway, viewed form the southwest.

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Table 1 Summary Tree Table

Tree #	Scientific & Common name	DBH[2]	Multi Trunk D's	Ord?[3]	Size[4]	Preservation Suitability[5]	Value[6]	Expected Construction Impact	Action	Reason
01	*Pinus canariensis*, Canary Island pine	15.8		X	30x18	Good	5400.00	Severe?	Remove	Construction
02	*Fraxinus angustifolia* `Raywood', Raywood ash	12.2		X	25x30	Fair/Good	1380.00	Severe	Remove	Construction
03	*Jacaranda mimosifolia*, Jacaranda	7.5			18x20	Good	690.00	Severe	Remove	Construction
04	Jacaranda	8.3			18x25	Good	830.00	Severe	Remove	Construction
05	Jacaranda	8.0			18x20	Good	780.00	Severe	Remove	Construction
06	Jacaranda	8.7			18x20	Good	860.00	Severe	Remove	Construction
07	Jacaranda	7.4			16x22	Good	630.00	Severe	Remove	Construction
08	Jacaranda	9.3			18x22	Good	1100.00	Severe	Remove	Construction
09	Jacaranda	9.9			20x25	Good	1170.00	Severe	Remove	Construction
10	*Geijera parviflora*, Australian willow	14.4 (4)		X	25x25	Fair	2510.00	Severe	Remove	Construction
11	Australian willow	14.6 (2.5)			25x20	Fair	2710.00	Severe	Remove	Construction
12	*Acer platanoides*, Norway maple	7.3			20x16	Fair/Good	850.00	Low	Save	
13	Australian willow	14.4 (4)		X	25x25	Fair	3260.00	Severe	Remove	Construction
14	*Acer palmatum*, Japanese maple	7.0 (1)			10x18	Fair/Good	760.00	Severe	Remove	Construction
15	*Lagerstroemia*	5.5	3.5, 2,		16x12	Fair	770.00	Severe	Remove	Construction

[2] DBH means tree trunk diameter "at breast height" measured at 4.5 feet above ground level. This is the arboricultural industry standard measurement height used in many tree-related calculations. Parentheses a number after DBH (e.g. (2.5) indicates that the tree was measured at a height other than DBH, due to low branching or other tree architecture.

[3] Ord.? = ordinance tree. An `X' in this column indicates that the tree is an ordinance tree.

[4] Size = canopy height x width in feet, estimated.

[5] Preservation Suitability: considers tree condition along with species and use of the site. See footnote #8, page 14 for a more complete explanation.

[6] Value: Estimated monetary tree value as per Trunk Formula Method. See page 11 for a complete explanation.

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Tree #	Scientific & Common name	DBH[2]	Multi Trunk D's	Ord?[3]	Size[4]	Preservation Suitability[5]	Value[6]	Expected Construction Impact	Action	Reason
	indica, crape myrtle	(2)	2							
16	crape myrtle	10.0 (3)	3, 2, 2, 2, 2, 2, 2		25x18	Fair	3040.00	Severe	Remove	Construction
17	Japanese maple	3.2 (0.5)			7x6	Good	230.00	Severe	Remove	Construction
18	*Cycas revoluta* cycad	8.5 (3)		X	5x7	Good	2730.00	Severe	Transplant	Valuable plant
19	crape myrtle	8.0			30x20	Fair	2530.00	Severe	Remove	Construction
20	Japanese maple	10.9 (1)			20x25	Fair/Good	2010.00	Severe	Remove	Construction
21	Australian willow	7.1			25x15	Poor	520.00	Low	Remove	Crowded, Structure
22	Australian willow	16.2 (4)		X	30x30	Fair	3950.00	Severe	Remove	Structure, Construction
23	Australian willow	5.6			16x16	Poor	300.00	Severe	Remove	Construction, Crowding, Structure
24	*Fraxinus species*, ash	11.2			35x25	Fair	1850.00	Low/Moderate	Remove	Structure
25	Japanese maple	8.1 (1)			16x20	Fair/Good	1310.00	Severe	Remove	Construction
26	Japanese maple	6.5			10x12	Fair/Good	790.00	Severe	Remove	Construction
27	ash	11.8			28x25	Fair/Good	2010.00	Low/Moderate	Save	
28	ash	9.7			30x20	Fair/Good	1440.00	Low	Save	
29	Australian willow	14.5 (4)		X	25x35	Fair/Good	3410.00	Severe	Remove	Construction
30	Australian willow	12.2 (3)			30x20	Poor/Fair	1600.00	Moderate/Severe	Remove	Construction, Structure
31	Raywood ash	14.8		X	30x20	Fair	1740.00	Severe	Remove	Construction, Structure
32	Australian willow	11.5 (4)			18x25	Fair	1910.00	Low/Moderate	Save	
33	*Prunus cerasifera* `Krauter Vesuvius' purple leaf plum	8.0 (2.5)			20x12	Poor	370.00	Severe	Remove	Construction, Condition
34	*Pyrus kawakami*, evergreen pear	8.6			22x22	Fair/Good	1560.00	Severe	Remove	Construction
35	evergreen pear	12.4		X	25x25	Fair	2310.00	Severe	Remove	Construction
36	evergreen pear	11.9			30x25	Fair	2130.00	Severe	Remove	Construction
37	evergreen pear	8.4			22x20	Fair/Good	1390.00	Severe	Remove	Construction
38	*Albizia julibrissin*, silk tree	12.7		X	30x40	Fair/Good	1780.00	Severe	Remove	Construction
39	Raywood ash	7.5			18x15	Fair/Good	560.00	Severe	Remove	Construction

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Tree #	Scientific & Common name	DBH[2]	Multi Trunk D's	Ord?[3]	Size[4]	Preservation Suitability[5]	Value[6]	Expected Construction Impact	Action	Reason
40	Raywood ash	5			18x15	Fair/Good	250.00	Moderate/Severe	Remove	Construction
41	Raywood ash	5.1			18x15	Fair/Good	260.00	Severe	Remove	Construction
42	Raywood ash	7.4			20x15	Fair/Good	510.00	Low/Moderate	Remove	Landscaping
43	Raywood ash	6.5			18x15	Fair	340.00	Severe	Remove	Construction
44	Raywood ash	7.5			20x18	Fair	510.00	Severe	Remove	Construction
45	Raywood ash	9.9			25x20	Fair	830.00	Severe	Remove	Construction
46	Raywood ash	7.2			25x16	Fair/Poor	380.00	Moderate/Severe	Remove	Construction, Structure
47	Raywood ash	12.2		X	25x25	Fair	1250.00	Severe	Remove	Construction
48	Raywood ash	6.6			16x16	Fair	360.00	Severe	Remove	Construction
49	Raywood ash	7.0			25x20	Fair/Good	440.00	Severe	Remove	Construction
50	Raywood ash	4.4			12x15	Fair	150.00	Severe	Remove	Construction
51	Raywood ash	5.7			20x12	Fair	290.00	Severe	Remove	Construction
52	Raywood ash	7.7			25x18	Fair/Good	550.00	Severe	Remove	Construction
53	Raywood ash	5.5			12x12	Fair/Good	280.00	Severe	Remove	Construction
54	ash	10.2			30x20	Fair	1540.00	Moderate/Severe	Remove	Construction
55	Australian willow	10.4 (4)			18x22	Fair	1190.00	Severe	Remove	Construction, Crowding
56	Raywood ash	14.5		X	40x30	Fair	1760.00	Severe	Remove	Construction
57	*Liquidambar styraciflua*, American sweet gum	11.8			50x25	Fair	1280.00	Severe	Remove	Construction, Structure
58	American sweet gum	10.1			40x20	Good	1290.00	Severe	Remove	Construction
59	American sweet gum	10.4			40x25	Good	1290.00	Moderate	Save	
60	American sweet gum	12.0			30x20	Fair/Good	1420.00	Moderate	Save	
61	American sweet gum	12.9 (1)		X	40x22	Good	1970.00	Moderate	Save	
62	Norway maple	12.2		X	30x25	Fair/Good	2290.00	Severe	Remove	Construction
63	Canary Island pine	14.9		X	45x20	Good	4660.00	Severe	Remove	Construction
64	Canary Island pine	16.8		X	45x20	Good	5700.00	Severe	Remove	Construction
65	Canary Island pine	16.8		X	45x20	Good	5900.00	Severe	Remove	Construction
66	Canary Island pine	18.1		X	50x18	Fair/Poor	3720.00	Severe	Remove	Construction, Vigor
67	Canary Island pine	18.1		X	50x20	Fair/Good	4630.00	Severe	Remove	Construction
68	Canary Island pine	16.4		X	50x20	Fair	3340.00	Severe	Remove	Construction
69	Canary Island pine	16.0		X	40x25	Good	4910.00	Severe	Remove	Construction

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Tree #	Scientific & Common name	DBH[2]	Multi Trunk D's	Ord?[3]	Size[4]	Preservation Suitability[5]	Value[6]	Expected Construction Impact	Action	Reason
70	Canary Island pine	14.5		X	40x20	Fair/Good	3630.00	Moderate/Severe	Save if possible	
71	Canary Island pine	13.1		X	30x18	Fair	2380.00	Moderate	Save	
72	Canary Island pine	12.1		X	40x16	Fair	2040.00	Moderate	Save	
73	Canary Island pine	16.1		X	50x18	Fair	3860.00	Moderate	Save	
74	Canary Island pine	16.4		X	45x20	Fair/Good	4510.00	Moderate	Save	
75	Canary Island pine	16.9		X	50x18	Fair/Good	4790.00	Moderate	Save	
76	Canary Island pine	19.8		X	50x30	Fair	5800.00	Moderate/Severe	Save	
77	Canary Island pine	11.6			30x15	Fair/Poor	1700.00	Moderate	Save/Debatable	Structure
78	Canary Island pine	16.6		X	45x18	Fair	3420.00	Moderate	Save	
79	Canary Island pine	19.0		X	50x16	Fair	5200.00	Moderate/Severe	Save	
80	Canary Island pine	22.4		X	50x18	Good	9800.00	Moderate/Severe	Save	
81	Canary Island pine	18.0		X	45x16	Fair	4650.00	Moderate	Save	
82	Save Canary Island pine	17.7		X	50x16	Fair	4650.00	Moderate	Save	Save
83	Canary Island pine	17.6		X	45x20	Fair/Good	5200.00	Moderate	Save	
84	Canary Island pine	16.5		X	45x20	Fair	4050.00	Moderate	Save	
85	Canary Island pine	10.4			28x10	Poor	920.00	Severe	Remove	Construction, Structure, Crowding
86	Canary Island pine	21.7		X	45x20	Fair/Good	7700.00	Severe	Remove	Construction
87	Canary Island pine	18.4		X	45x18	Fair/Good	6300.00	Severe	Remove	Construction
88	Canary Island pine	15.3		X	50x20	Fair/Good	3990.00	Severe	Remove	Construction
89	Canary Island pine	15.7		X	40x18	Fair/Good	4590.00	Severe	Remove	Construction
90	Canary Island pine	14.1		X	40x18	Fair/Good	3720.00	Severe	Remove	Construction
91	Canary Island pine	22.1		X	50x22	Fair/Good	7800.00	Severe	Remove	Construction
92	Canary Island pine	17.5		X	50x20	Fair/Good	5100.00	Severe	Remove	Construction
93	*Magnolia*	9.3	5.4,		20x18	Fair/Good	3100.00	Severe	Remove	Construction

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Tree #	Scientific & Common name	DBH[2]	Multi Trunk D's	Ord?[3]	Size[4]	Preservation Suitability[5]	Value[6]	Expected Construction Impact	Action	Reason
	soulangeana, Saucer magnolia		4.3, 4.5							
94	Saucer magnolia	10.8 (3.5)	5.4, 2.8, 4.9, 3.1		22x25	Fair/Good	3610.00	Severe	Remove	Construction
95	Saucer magnolia	11.6 (4)	5.1, 3.6, 4.9, 4.4		25x22	Fair/Good	4230.00	Severe	Remove	Construction
96	Saucer magnolia	9.8 (3)	5.2, 4.4, 4.8		25x20	Fair/Good	3010.00	Severe	Remove	Construction
97	Saucer magnolia	9.7 (3)	3.1, 2.8, 3.6, 4.9		25x20	Fair/Good	2950.00	Moderate/Severe	Remove	Construction, Landscaping
98	Saucer magnolia	12.1 (3.5)	4.9, 4.3, 4.1, 2.1, 3.9		22x20	Fair/Good	4520.00	Moderate/Severe	Remove	Construction, Landscaping

Ash & Australian willow trees along Duane Avenue, from the east.

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INTRODUCTION

PURPOSE OF SURVEY & REPORT

This survey and report was required by the City of Sunnyvale as a part of the building permit process for this project. The purpose of this survey & report is to identify and describe the tree species on site - - their size and condition, and their suitability for preservation. All existing trees on site are included. The audience for this report is Kenneth Rodrigues & Partners (the project general architects); project landscape architect Jim Lauderbaugh of Lauderbaugh Associates, and City of Sunnyvale authorities concerned with tree preservation and tree removal. The goal of this report is to preserve existing trees on site that are in good condition, are good species for the area, will survive site changes, and will fit in well with the proposed new use of the site.

SURVEY METHODS

I evaluated the existing trees on site on December 14, 2005. Each tree was tagged with a metal number tag that corresponds with its tree number in this report. Trunk diameter was measured at *DBH* (diameter at breast height, 4.5 feet above the ground). DBH is a standard arboriculture trunk diameter measurement height that is used in many tree-related calculations). Trunk diameter was also measured at 4 feet above the ground if the tree was close to "ordinance size", to make sure that we found all ordinance trees on site. A diameter tape was used to measure trunk diameters, and the diameters were rounded to the nearest 10th on an inch. Photographs were taken of all trees on site on December 14. Some of these photos are included in this report, but all photos are available from me by email if requested

The subject trees were briefly evaluated for their structural condition (stability) and general health (vigor) by visual assessment from the ground. No *root collar excavations*[7] or other probing or boring was done upon any trees. Characteristics such as form, weight distribution, foliage color and density, wounds and indicators of decay were recorded. Tree size (approximate height and canopy spread in feet) were estimated and recorded. Surrounding site conditions were also observed.

[7] A root collar excavation is the removal of soil below grade (or excess soil above the natural grade) at the root collar to expose and/or determine the health of tissue in this area. This is done to assess anchorage and stability of the tree. Any problems in this area can translate to whole tree health, as well as stability.

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Evaluation procedures were adapted from:

- *Guide for Plant Appraisal*, 9th edition, 2000, authored by the Council of Tree and Landscape Appraisers (CTLA) and published by the International Society of Arboriculture (ISA).
- *Species Classification and Group Assignment* published by the Western Chapter of the International Society of Arboriculture (WCISA), 2004.
- *Tree Hazard Evaluation Form* taken from *Evaluation of Hazard Trees in Urban Areas*, 2nd Ed., Matheny & Clark, International Society of Arboriculture, 1994.

The above three references serve as industry professional standards for tree and landscape evaluations.

FIELD CONDITIONS

The site currently includes a beautiful modern office building and surrounding parking lot. Landscaping on the property is better than average for a commercial complex of this area. There are many nice trees on site such as Jacarandas along Lawrence Expressway, large American sweet gums along Stewart Avenue, and Canary Island pines along the south perimeter of the property. Additional landscaping (shrubs and groundcovers) is also very nice, with interesting plants such as tree ferns and even a large cycad (tree #18) by the front entrance to the building.

The topography of the site is mostly level although there is a steep landscaped slope down to the street along Duane Avenue. Sun exposure for the trees varies from full to partly shaded, depending upon proximity to existing buildings and to other trees. The site appears to be fully automatically irrigated with sprinklers. Landscape maintenance is above average.

BACKGROUND INFORMATION

The original Arborist Report for this project was dated December 15, 2005. An addendum to that report (based upon revised parking lot entrances along Stewart Avenue) was written on December 20, 2005. Additional site layout changes were made and some errors were discovered in the December 15 report, which is the reason for this revised report. Several issues about grading and use of specific areas was also made more clear for this revised arborist report.

****

I hope that this information will be helpful to you. Thank you for the opportunity to provide service. Please call me if you have questions or if I can be of further assistance.

Sincerely,

Deborah Ellis

Deborah Ellis, MS.
Consulting Arborist & Horticulturist
ASCA Registered Consulting Arborist#305, W.C.I.S.A. Certified Arborist #457, Certified Professional Horticulturist #30022

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APPENDIX

TREE PROTECTION SPECIFICATIONS

Definition of Tree Dripline: the area under the total branch spread of the tree, all around the tree.

A Pre-Construction meeting at the site shall be conducted with the Consulting Arborist, the developer, and the general contractor. The general contractor is responsible to see that these tree protection specifications are implemented and that all people working at the site are aware and adhere to these specifications. A copy of these Specifications is to remain and be accessible at the site at all times. Additional meetings on site with workers may be necessary and should be organized with the Consulting Arborist.

Unexpected conditions and changes are necessary on all construction projects. Such situations may necessitate that changes or modifications be made to these Tree Protection Specifications. Any concerns or conflicts with these Specifications should be brought to the attention of the Consulting Arborist immediately so that alternate methods may be agreed upon.

The general contractor or owner should arrange to hire laborers who's specific job it will be to carry out the tree protection work; for example installing (and moving if necessary) tree protection fencing, obtaining and spreading mulch, watering trees, etc. Qualified tree services (recommended by the Consulting Arborist) can do some of this work such as watering trees (e.g. water jet irrigation), and other specialized tasks such as pruning. This recommendation is designed to avoid the problem of not having the labor to do tree protection tasks as written in these Specifications and also any additional work requested by the Consulting Arborist.

The tree Protection Specifications apply to all existing trees on the property that will remain in the newly developed site.

1) **DESIGN** the site & improvements so as to stay as far away from existing tree trunks as possible, preferably outside the dripline. When this is not possible, use the least-damaging improvements within tree driplines as possible, for example pier on grade beam foundation (with no excavation for grade beam) instead of slab with concrete perimeter foundation. Alterations of natural grade must ensure that water drains away rather than toward tree trunks.

2) **IRRIGATION**. Make sure that trees are well hydrated before any demo or construction. Irrigate the trees if necessary approximately 2 weeks before any work will begin if the soil is not moist to at least 12 inches below the surface. This will help the trees go into the project strong and not drought-stressed, so they will be better able to weather any damage they may experience. The frequency and amount of water will depend upon the weather, the damage to the tree, and the soil moisture status. The Project Consulting Arborist will provide directions for irrigation.

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3) **PRUNING FOR CLEARANCE**. Pruning prior to construction should be as little as possible, and only what is required for demo and construction clearance. Branches that must be shortened should be cut back to appropriately sized lateral branches whenever possible, and not to stubs. Aesthetic pruning can be done later, if necessary. Use a qualified tree service with an International Society of Arboriculture Certified Arborist on staff. The tree pruner should follow the following arboriculture industry standards:

   a) Best Management Practices, Tree Pruning. 2002. International Society of Arboriculture, PO Box 3129, Champaign, IL 61826-3129. 217-355-9411
   b) ANSI Z1331 American National Standards for Tree Care Operations. 2001 Edition. Secretariat: National Arborist Association, Inc. American National Standards Institute, 11 West 42nd St., New York, New York, 10036. (Covers safety)
   c) ANSI A300 Pruning Standards. 2001 Edition. Ibid. (Covers tree care methodology).

4) **FENCING**. The first and foremost method of tree protection is fencing off the tree or groups of trees from the construction **before** any demolition or construction begins. The area inside the fencing is termed the **"tree protection zone"**. The fencing shall be installed 1 to 2 feet beyond the over-excavation (or slightly more if necessary) required for each improvement, otherwise at or beyond the dripline of the tree (or groups of trees), whichever is greater. In all cases place the fencing as far from protected tree's trunks as possible, in order to provide the maximum amount of protected space for each tree or group of trees. The fencing shall be 6-foot high metal cyclone mesh attached securely to 2-inch diameter steel posts driven 18 inches into the ground so that they cannot easily be moved. Durable neon-colored flagging tape should be woven through the top of the fence to increase visibility to vehicle operators. If the fencing must be placed on an impermeable surface, the posts may be inserted into post stands. If the impervious surface is later removed, the posts should then be placed into the ground, as described above. The fencing shall not be taken down or moved without the Project Consulting Arborist's permission. The Arborist must supervise any necessary work inside the fencing. An 18-to 24-inch wide gap may be left in the fencing (bordered by posts on each side) to allow access for tree work and monitoring. The Arborist must meet on site with the general and fencing contractors prior to demo, to agree upon fence placement. The Arborist must also inspect fence installation prior to the start of demo.

5) **TREE PROTECTION SIGNAGE** shall be posted on the fencing every 25 feet or in each cardinal direction (whichever is less), clearly proclaiming that there is to be no unauthorized work or persons within the tree protection zone, no dumping of chemicals or storage of materials or equipment, and who to contact regarding this. Use the template sign that I have provided. Signs must be either laminated or metal. You may order laminated signs from me. For more durable and reusable signs, you may send the template and explanatory sheet (also available from me) to a sign company to have the appropriate number of durable aluminum signs made for the project. Signs must be attached to the fencing with plastic wire ties – 1 wire tie at each of the 4 corners. Temporary signs (paper copies of the sign in a protective plastic binder sheet) must be placed on the fencing prior to demo if the metal signs are delayed. In any case, signs must be on fencing before demo. If paper signs are used, they must be replaced before fading. I strongly recommend that at minimum you use laminated signs, as paper signs do not last long and have to be replaced often.

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6) **MULCHING**. Spread a 3 to 4-inch depth of coarse organic mulch such as wood chips beneath tree driplines within the protection zone. Suitable mulch material (tree pruning chippings) is available from local tree services, usually at no cost. Specify "clean mulch material" that does not include walnut, Eucalyptus or any other material that may be toxic to the trees or other landscape plants. Keep the mulch 6 to 12 inches away from the *root collar* (junction between trunk and roots) of the tree. The mulch will help regenerate new fine roots beneath the mulch that will compensate for some of the root loss or root damage that trees experience. This simple task is perhaps one of the most effective things that can be done for trees. This mulch may be omitted if there is existing vegetation within the tree protection area. Existing vegetation (such as lawns) should be left in place and not ripped out. If pavement is removed within the tree protection zone, then mulch must be placed within this area. Wet the soil underneath the previous pavement to a depth of at least 6 inches, spread the mulch, and then wet the mulch throughout its entire depth.

7) **Dealing with Exposed and/Or Damaged Roots**: You may encounter some roots during soil work. It is strongly recommended that the Consulting Arborist be on site during these times to assist in root cutting, covering and documentation of root damage. Roots 2 inches in diameter or greater that must be removed or have been damaged should be cut cleanly near the soil line. Roots greater than 4 inches in diameter may not be removed without the Arborist's approval. If roots are encountered that must be removed, cut them right away rather than tearing them back toward the trunk with heavy equipment. Sometimes less root damage will occur if roots are precut 6 to 12 inches beyond the planned excavation. Specialized root-pruning equipment such as a Vermeer™ or Dosco™ root pruner machine can be used. If roots are not precut, then encountered roots that must be removed must be cut cleanly and at a right angle if possible, and then immediately covered with moist soil or thick shag rug that is kept wet until backfill is replaced. Use a sharp hand pruning saw or a gas or electric recipro-saw (not a construction wood saw, axe, etc.) for cutting roots. For large roots (generally 2 inches or greater in diameter) a rock or concrete saw or chainsaw with a carbide blade can be used. Exposed or cut roots should always be covered to prevent desiccation and death – as soon as possible after exposure. Tree Seal™ or equivalent asphalt-based pruning paint can immediately be sprayed on cut root faces at trench walls and is probably the easiest and most effective method of attending to cut roots, and this is what I recommend. Otherwise thick shag carpeting or 3 layers of wetted natural burlap or moist soil or mulch can be used to cover roots and reduce drying. If you are uncertain about the size or status of roots and what to do about them, contact me for assistance.

   a) **For basement excavations** use soil nailing and shotcrete construction to avoid over-excavation.

   b) **Underground utilities:** Deborah Ellis has not reviewed the utility plans. Every attempt should be made to keep underground utility lines outside tree protection zones. If any utility lines will pass through tree protection zones, Deborah Ellis must review these plans and prescribe any mitigation procedures that will reduce damage to trees. It utilities must pass through tree protection zones, the Project Consulting Arborist must be on site to supervise this work and assist in dealing with roots. Abandoned pipes and utilities should be cut at existing grade and not pulled out, if their removal would damage tree roots.

   c) **Pavement removal:** This may be done with a backhoe if done carefully so as not to damage the trunk of the tree, and to disturb the roots of the tree as little as possible. The backhoe or other equipment must sit on existing pavement and work backwards so as to remain on the pavement or otherwise outside tree protection zones. Alternatively, pavement may be broken into manageable pieces (e.g. by hand with jackhammer) and hand loaded onto a loader. Where roots larger than 2 inches in diameter have grown into the existing base course material, use the existing material as the new material and do not remove and replace it.

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d) **Structure demo:** structures should be collapsed inward and/or away from adjacent trees. Demo equipment must sit outside tree protection zones.

e) **Herbicides used underneath pavement** must be labeled for use around trees.

f) **Vehicle traffic beneath tree canopies:** Where vehicles or equipment will travel or site beneath tree canopies (but outside tree protection zones), a 4-inch layer of drain rock covered by a 6-inch layer of coarse wood chips, overlain by ¾ inch thick plywood shall be placed on the soil surface. The vehicles must remain on this soil compaction buffer.

g) **Trees to be removed**: Trees to be removed must be removed without damaging trees that will remain. Do not pull out stumps and roots, but rather grind them to 12 inches below grade. If trees to be removed are very far from any trees to remain (e.g. 2 to 3 times the dripline diameter of trees to remain), then they may be pulled out or pushed over as long as remaining tree roots or aboveground portions of the tree will not be damaged. If stumps to be ground are very close to trees to remain (e.g. within 3 x DBH (trunk diameter at 4.5 feet above ground) of the tree that will remain, then do not grind the stump, but rather cut it as flush with the ground as possible.

8) **OTHER**: Do not dump cement tailings, chemicals or other waste products into any landscape area, not just within tree protection zones. Preferably, have a designated washout pit far from landscape areas.

9) **TREE PROTECTION SUPERVISION**

a) **Tree Protection Inspections & Documentation:** The supervising Project Consulting Arborist must be a qualified International Society of Arboriculture Certified Arborist or (preferably) a member of the American Society of Consulting Arborists (preferably a Registered Consulting Arborist)). The Arborist must supervise any work within the fenced area, or when roots or branches of the tree are encountered or are expected to be encountered. The Arborist will inspect the site for tree protection specification compliance at least monthly from prior to demo until immediately after construction is completed. Immediately after each tree protection inspection an inspection report should be faxed to the project superintendent and the City Planning Department contact for the project. The inspection report shall include the following information:

i) Inspector name and contact information
ii) Date and time of inspection:
iii) Date of last inspection
iv) Reason for inspection
v) Weather (approximate temperature, any rainfall, etc.)
vi) Current demo or construction work on site
vii) Additional demo or construction work completed since last inspection
viii) Tree protection fencing status (including tree protection signage)
ix) Mulching status (if required)
x) Tree work done within last inspection period (pruning, irrigation, etc.)
xi) Grading, trenching, excavations, cut or exposed roots, root recutting and protection
xii) Other

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10) **LANDSCAPING AFTER CONSTRUCTION** should be compatible with existing trees. Refrain from rototilling within tree driplines. Any planting within this area should be done by hand. Plants and new irrigation including irrigation trenching are best kept 5 to 10 feet away from the trunks of existing trees (or 3 x DBH, whichever is greater), depending upon the size and type of tree, and the environmental conditions. Farther is better. Some trees should have no planting or irrigation within their driplines, for example California native oaks. Refrain from making any major changes to the present landscape environment, as large mature trees often cannot adapt so such changes and may decline and die over time because of them. Again, contact me for assistance in the landscape design phase if necessary.

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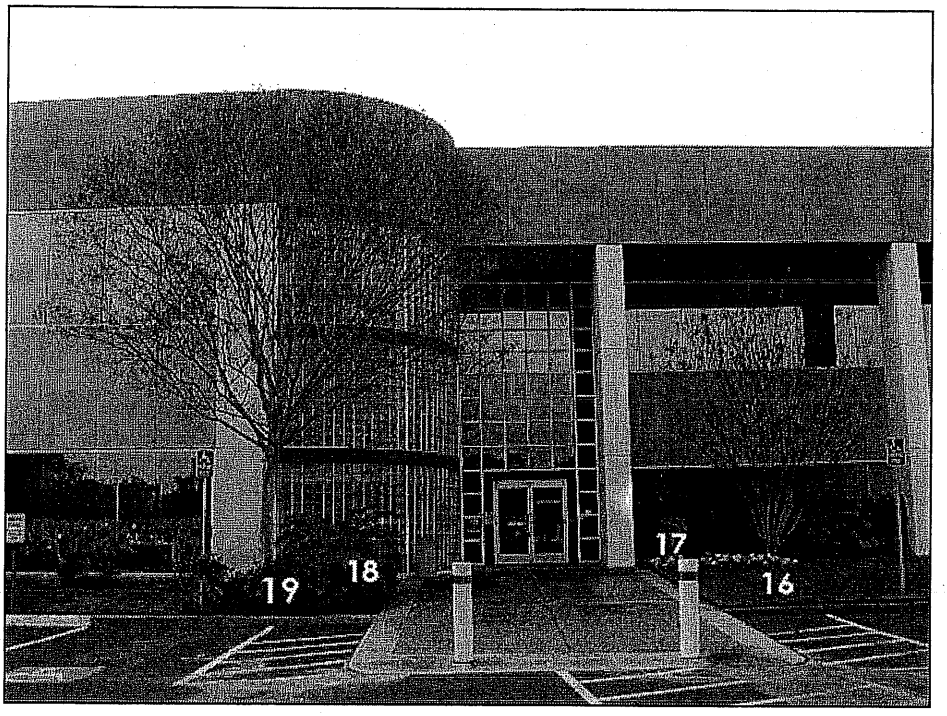
TREE MONETARY VALUES

The **trunk formula method** of tree monetary valuation was used to obtain the tree values in this report. This method is based upon trunk diameter and regional cost per square inch of trunk diameter. This method, calculated with a standard spreadsheet, is most commonly used to determine the value of damaged or removed trees of a size and/or species that is too large to transplant, which in our area is generally 8 inches in trunk diameter.

The trunk formula calculation methodology is taken from two industry standard texts – The Guide for Plant Appraisal, 9th edition, 2000, edited by the Council of Tree & Landscape Appraisers and published by the International Society of Arboriculture, and the Species Classification and Group Assignment, 2004, published by the Western Chapter of the International Society of Arboriculture.



East side of existing building, viewed from Lawrence Expressway. Trees #16 & 19 are crape myrtles. Tree #17 is a small red-leaved Japanese maple. Tree #18 is a cycad, a primitive palm-like plant. This cycad is quite valuable due to its size.

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GLOSSARY

1) **Co-dominant** refers to two leaders; branch or trunks that arise at the same point on a tree and are about the same size. This is an undesirable structural defect that could be a weak point in the tree. Co-dominant stems typically lack the overlapping tissue present in a branch or trunk collar, which may be why trees with this defect split so easily. It is best that branches or trunks originate with space between them, or if they arise at the same point that they be of different sizes. Co-dominant leaders can often be corrected (one leader removed) when trees are young. When trees are older it is often better to thin foliage of the less desirable leader by 25% to slow its growth and size relative to the other stem.
2) **Conk:** the fruiting body (reproductive structure) of a wood decay fungus. It usually assumes a "shelf-like" orientation when growing from the side of a trunk or branch. On top of roots, conks often assume a flat or "tabletop" shape. Conks are often a sign that extensive decay has already occurred within the wood.
3) **End-weight reduction**: Perform this pruning on long, large, heavy branches that tend toward the horizontal, usually lower branches in the tree. Maintain live branches along as much of the lower part of the heavy limb as possible (close to the trunk). In other words, try to maintain a low center of gravity as far as the limb is concerned. Do not strip or "lion-tail" branches so that the foliage only remains near the terminal end. Thin predominantly at the terminal end, (the outer 1/3 of the branch), removing less as you move down the branch. Try to conserve foliage and branches along the lower portion of the branch. Try not to remove branches greater than 3 inches in diameter. This may mean that only very small amounts (and very small diameter) branches and twigs are removed from the terminal portion of a branch. In addition to reducing end-weight, this also slows the growth of the branch. Remove no more than 25% of the live foliage on any branch.
4) ***Ganoderma applanatum*** is a fungus that causes a heartrot or decay of live and dead trees. It can also attack and kill a wide variety of trees, from conifers to hardwoods. The fungus colonizes wounds, kills the sapwood of some tree species, and causes decay of both sapwood and heartwood in roots, butts and trunks. The fungus can spread vegetatively through natural root grafting as well. Columns of decaying wood extend as far as 15 feet above and below the fruiting bodies (conks) on trunks. In the roots the fungus is usually restricted to within 3 feet of the soil line. The conks are usually found near ground level or on the lower part of the trunk, and often on an old wound. Destruction of the sapwood over time leads to the decline or failure of the tree. Because diseased trees often break or fall before death, the only overt indicator of disease in most standing trees is the conk. References: Sinclair et al. 1987 Cornell University Press. Diseases of Trees & Shrubs, 2nd edition, and Hickman et al., Western Chapter of the International Society of Arboriculture, 1997. Ten Common Wood Decay Fungi on Calif. Landscape Trees.
5) **Girdling roots** tightly encircle the trunk of the tree at or close to the ground, and may inhibit the flow of water and nutrients by "choking" vascular elements in the trunk or other roots. Before becoming girdling roots, ***circling roots*** encircle all or a portion of the trunk of a tree or shrub at or close to the ground but have not yet begun to inhibit the flow of water and nutrients. Girdling roots can cause whole-tree failures at the root collar.
6) **Included bark** is bark sandwiched between adjacent branches, a branch and the trunk, or two or more trunks, often appearing as a seam. In contrast, a normal attachment will have a ridge

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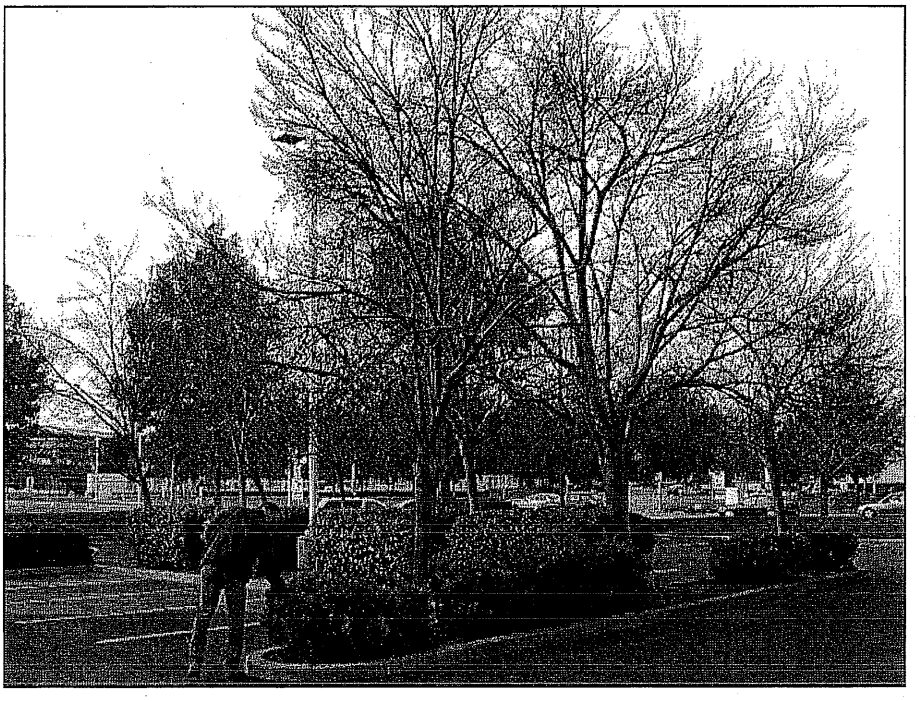
of bark protruding upwards and a continuous wood connection between adjacent members. As limbs with included bark grow, they expand in diameter, squeezing the bark along the seam. This may kill some portion of the included bark. When this occurs, a wound response is initiated. As a consequence, cracks can be generated, leading to breakage. Such defects can often be completely removed when a tree is young (e.g. the offending members equal or less than 2 inches in diameter). Older, larger cuts (such as 6 inches in diameter or more) could cause decay to spread into the remaining member, which is undesirable. In these cases it may be best to thin one member (usually the smaller member) by 25% to slow its growth and size.

7) **Multiple trunk (leaders) or branch attachments** are a common structural defect in many tree species such as ash and flowering pear. In this condition, more than one branch or trunk originates at the same point. These attachments are not as strong as well-spaced branches or trunks, particularly if included bark between them prevents a solid wood connection.
8) **Scaffold branch**: a primary structural branch arising from the trunk of a tree. Usually the largest branches of the tree.
9) **Subdue pruning (Subduing individual branches)**: The thinning of individual branches or leaders in trees with co-dominant leaders or branches, and also long or heavy branches in order to slow their growth, size and dominance. This type of pruning very similar to end weight reduction and should occur in the terminal 1/3 of the branch so as to maintain as low a center of gravity as possible. Pruning should focus on reducing the amount of foliage so as to reduce food supply to the branch and subsequent growth. No more than 25% of total live foliage should be removed from any one branch.



West parking lot along Stewart Drive. Trees within the parking lot are **Raywood ash**.

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Table 2 Detailed Tree Information Table

#	Common name	DBH	Cond-V[8]	Cond-S	Work Needed (If tree remains)	Action	Notes
01	Canary Island pine	15.8	90	90		Remove	Tree is shown to be a few feet away from proposed new parking entrance driveway. Tree does not appear on landscape plans, so I assume landscape architect plans to remove it
02	Raywood ash	12.2	80	70		Remove	Within proposed new parking lot.
03	Jacaranda	7.5	90	70		Remove	Within proposed building. Could be transplanted or salvaged by tree moving company.
04	Jacaranda	8.3	90	70		Remove	Same as above
05	Jacaranda	8.0	90	70		Remove	Same as above
06	Jacaranda	8.7	90	60		Remove	Same as above
07	Jacaranda	7.4	80	70		Remove	Same as above
08	Jacaranda	9.3	90	80		Remove	Same as above
09	Jacaranda	9.9	90	70		Remove	Same as above
10	Australian willow	14.4	70	50		Remove	Within a few feet of proposed building.
11	Australian willow	14.6	75	50		Remove	Within proposed parking lot. The parking lot grade will be 1.5 to 2 feet lower than the existing grade, which will necessitate the removal of many of the trees along its perimeter.
12	Norway maple	7.3	80	70		Save	Proposed parking lot 6 to 7 feet from tree.
13	Australian willow	14.4	80	50		Remove	Proposed driveway within a few feet of tree.
14	Japanese maple	7.0	80	60		Remove	Within proposed parking lot. Could be transplanted or salvaged.
15	crape myrtle	3.5, 2, 2	80	50		Remove	Same as above
16	crape myrtle	3, 2, 2, 2, 2, 2, 2, 2	80	60		Remove	Same as above
17	Japanese maple	3.2	80	80		Remove	Same as above

[8] Cond-V & Cond-S mean *Condition (Vigor)* and *Condition (Structure)*. 100 = excellent, 80 = good, 60 = fair, 40 = poor, and 20 = unacceptable. These two components of tree condition are rated separately and then averaged to obtain the Average Condition Rating. This is then considered with the tree species and the use of the site to come up with the "Preservation Suitability" ratings in Table 1. The ratings and the methodology for obtaining them are taken from two industry standard texts – The Guide for Plant Appraisal, 9th edition, 2000, edited by the Council of Tree & Landscape Appraisers and published by the International Society of Arboriculture, and the Species Classification and Group Assignment, 2004, by the Western Chapter of the International Society of Arboriculture.

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#	Common name	DBH	Cond-V[8]	Cond-S	Work Needed (if tree remains)	Action	Notes
18	cycad	8.5	80	80		Transplant	Within proposed parking lot. Don't throw this away -- it is a very valuable plant! Recommend having it boxed and transplanted elsewhere.
19	crape myrtle	8.0	80	70		Remove	Within proposed parking lot. Could be transplanted or salvaged.
20	Japanese maple	10.9	80	60		Remove	Same as above
21	Australian willow	7.1	80	40		Remove	Poor condition -- tree deformed and severely bent over due to crowding by adjacent larger trees.
22	Australian willow	16.2	80	50		Remove	Tree a few feet away from proposed parking lot. Large scaffold branch failure & tear wound to N trunk. Looks like caused by multiple attachment of vertical scaffolds and branches with included bark.
23	Australian willow	5.6	70	40		Remove	Within proposed parking lot. Tree deformed and severely bent over due to crowding by adjacent larger trees.
24	ash	11.2	80	50	Subdue prune middle trunk.	Remove	6 to 7 feet from proposed parking lot. Structure poor (3 co-dominant trunks).
25	Japanese maple	8.1	80	60		Remove	Within proposed parking lot. Could be transplanted or salvaged.
26	Japanese maple	6.5	70	70		Remove	Same as above
27	ash	11.8	80	60		Save	8 to 9 feet from proposed parking lot.
28	ash	9.7	80	60		Save	Same as above
29	Australian willow	14.5	90	50		Remove	Right at edge of proposed parking lot.
30	Australian willow	12.2	60	50		Remove	4 to 5 feet from proposed parking lot, structure not good.
31	Raywood ash	14.8	80	50		Remove	Within proposed parking lot. Some growth cracks on scaffolds and trunk look rather deep, like they are cracking into underlying wood. Tree leans and cracks could be associated with lean. Root collar also indented as enters soil N side -- may be a girdling root here.
32	Australian willow	11.5	80	50		Save	
33	purple leaf	8.0	60	40		Remove	Within proposed parking lot.

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#	Common name	DBH	Cond-V[8]	Cond-S	Work Needed (if tree remains)	Action	Notes
	plum						*Ganoderma* conk growing out of root collar (a wood decay fungus).
34	evergreen pear	8.6	80	70		Remove	Within proposed parking lot.
35	evergreen pear	12.4	70	60		Remove	Same as above
36	evergreen pear	11.9	70	60		Remove	Same as above
37	evergreen pear	8.4	80	60		Remove	Same as above
38	silk tree	12.7	80	70		Remove	Same as above
39	Raywood ash	7.5	80	70		Remove	Within proposed building.
40	Raywood ash	5	80	60		Remove	Blocks entrance, landscaping
41	Raywood ash	5.1	80	60		Remove	Blocks handicap parking path
42	Raywood ash	7.4	80	60		Remove	Interferes with proposed landscaping
43	Raywood ash	6.5	70	50		Remove	Within proposed parking lot
44	Raywood ash	7.5	75	60		Remove	Same as above
45	Raywood ash	9.9	80	50		Remove	Same as above
46	Raywood ash	7.2	75	40		Remove	Within proposed planter, but may be right at edge. Structure is not good, better to remove tree.
47	Raywood ash	12.2	80	50		Remove	Within proposed parking lot.
48	Raywood ash	6.6	80	50		Remove	Same as above
49	Raywood ash	7.0	80	60		Remove	Same as above
50	Raywood ash	4.4	70	50		Remove	Within proposed building.
51	Raywood ash	5.7	75	60		Remove	Same as above
52	Raywood ash	7.7	80	60		Remove	Same as above
53	Raywood ash	5.5	80	60		Remove	Same as above
54	ash	10.2	80	50		Remove	8 to 9 feet from proposed building.
55	Australian willow	10.4	70	50		Remove	Within a few feet of proposed building. Distorted form due to too many trees planted too close together in this area.
56	Raywood ash	14.5	80	50		Remove	Within proposed building
57	American sweet gum	11.8	90	40	Subdue prune co-dominant scaffold/trunk	Remove	Within a few feet of proposed building. Although vigor is excellent, tree has co-dominant leader with narrow crotch and included bark (poor structure).
58	American sweet gum	10.1	90	80		Remove	Proposed building 5 to 6 feet from trunk – branches on building side of tree would have to be severely pruned.
59	American sweet gum	10.4	90	70		Save	
60	American sweet gum	12.0	90	60		Save if possible	Within proposed parking lot/ driveway entrance.
61	American	12.9	90	70		Save	6 to 7 feet from proposed

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#	Common name	DBH	Cond-V[6]	Cond-S	Work Needed (if tree remains)	Action	Notes
	sweet gum						parking lot.
62	Norway maple	12.2	80	70		Remove	Within proposed parking lot
63	Canary Island pine	14.9	90	70		Remove	Within proposed parking lot entrance.
64	Canary Island pine	16.8	90	70		Remove	Same as above.
65	Canary Island pine	16.8	90	70		Remove	Planter area too narrow and too close to tree trunk.
66	Canary Island pine	18.1	50	60		Remove	Right on edge of proposed parking lot.
67	Canary Island pine	18.1	70	60		Remove	Same as above.
68	Canary Island pine	16.4	70	50		Remove	Within path of proposed trash enclosure
69	Canary Island pine	16.0	80	80		Remove	Within proposed parking lot.
70	Canary Island pine	14.5	80	70		Save if possible	7 to 8 feet from proposed building
71	Canary Island pine	13.1	60	60		Save	Same as above
72	Canary Island pine	12.1	60	60		Save	Same as above
73	Canary Island pine	16.1	70	60		Save	Same as above
74	Canary Island pine	16.4	70	70		Save	Same as above
75	Canary Island pine	16.9	70	70		Save	Same as above
76	Canary Island pine	19.8	70	60	End weight reduction of long branch over parking lot to N	Save	Same as above
77	Canary Island pine	11.6	70	50		Save	7 to 8 feet from proposed building. Significant jog in trunk
78	Canary Island pine	16.6	70	50		Save	7 to 8 feet from proposed building.
79	Canary Island pine	19.0	70	50	Subdue prune co-dominant trunk	Save	7 to 8 feet from proposed building. Co-dominant leader with included bark at 25 feet
80	Canary Island pine	22.4	80	80		Save	7 to 8 feet from proposed building.
81	Canary Island pine	18.0	70	50		Save	7 to 8 feet from proposed building. Significant curve in trunk
82	Canary Island pine	17.7	70	60		Save	7 to 8 feet from proposed building.
83	Canary Island pine	17.6	80	60		Save	Same as above
84	Canary Island	16.5	70	60		Save	Same as above

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#	Common name	DBH	Cond-V[8]	Cond-S	Work Needed (If tree remains)	Action	Notes
	pine						
85	Canary Island pine	10.4	40	40		Remove	Within path of proposed trash enclosure.
86	Canary Island pine	21.7	80	60	End weight reduction pruning of long heavy branch over parking lot	Remove	Same as above.
87	Canary Island pine	18.4	80	75		Remove	Planter area too narrow and too close to tree trunk.
88	Canary Island pine	15.3	70	75		Remove	Same as above
89	Canary Island pine	15.7	85	70		Remove	Same as above
90	Canary Island pine	14.1	85	70		Remove	Same as above
91	Canary Island pine	22.1	80	60		Remove	Same as above
92	Canary Island pine	17.5	80	60		Remove	Same as above
93	Saucer magnolia	5.4, 4.3, 4.5	80	70		Remove	Within proposed parking lot. Could be transplanted/salvaged.
94	Saucer magnolia	5.4, 2.8, 4.9, 3.1	80	70		Remove	Within proposed building. Could be transplanted/salvaged.
95	Saucer magnolia	5.1, 3.6, 4.9, 4.4	80	70		Remove	Same as above
96	Saucer magnolia	5.2, 4.4, 4.8	80	75		Remove	Same as above
97	Saucer magnolia	3.1, 2.8, 3.6, 4.9	80	75		Remove	Close to proposed building, interferes with proposed landscaping.
98	Saucer magnolia	4.9, 4.3, 4.1, 2.1, 3.9	80	70		Remove	Same as above

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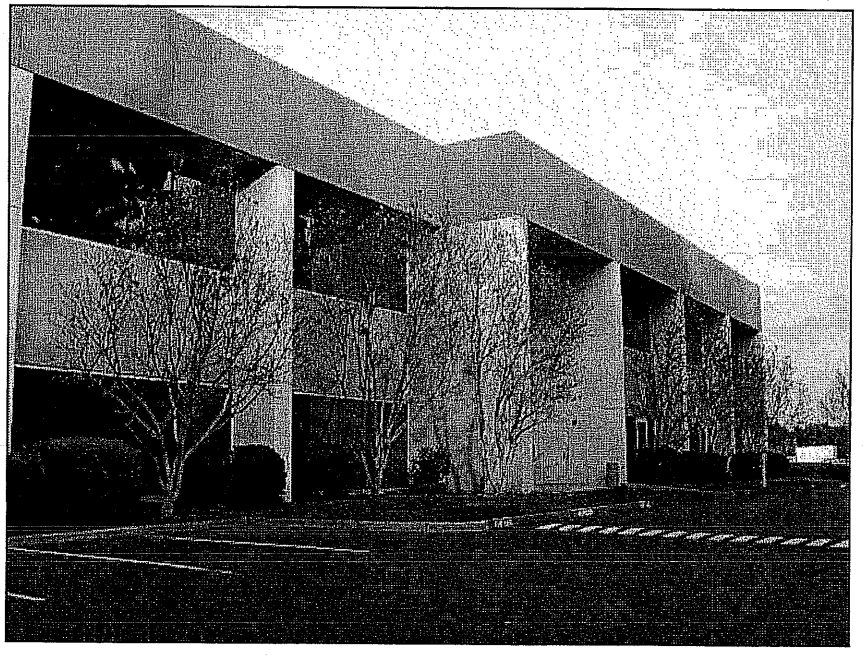
LIMITS OF SCOPE

1) **I certify that I have no financial interest in the property or project** that is the subject of this report.
2) **Tree locations** were provided by Kier & Wright Civil Engineers and are shown on the Tree Map on page 1 of this report. Locations are assumed to be accurate but should be verified in the field.
3) **I have reviewed the following plans for this project:**
   a) Preliminary Grading Plan (Kier & Wright), October 4, 2005.
   b) Stormwater Management Plan, Ibid.
   c) Site plan sent from Kenneth Rodrigues & Partners dated 1/30/06.
4) **The measures noted within this report** are designed to assist in the protection and preservation of the trees mentioned herein, should some or all of those trees remain, and to help in their short and long term health and longevity. This is not however, a guarantee that any of these trees may not suddenly or eventually decline, fail, or die, for whatever reason. Because a significant portion of a tree's roots are usually far beyond its *dripline*[9], even trees that are well protected during construction often decline, fail or die. Because there may be hidden defects within the root system, trunk or branches of trees, it is possible that trees with no obvious defects can be subject to failure without warning. The current state of arboricultural science does not guarantee the accurate detection and prediction of tree defects and the risks associated with trees. There will always be some level of risk associated with trees, particularly large trees. It is impossible to guarantee the safety of any tree.



Saucer magnolias against south side of existing building. Trees **#93 to 98**, right to left.

[9] Dripline: the area under the total branch spread of the tree, all around the tree. Although tree roots may extend out 2 to 3 times the radius of the dripline, a great concentration of active roots is often in the soil directly beneath this area.